

Amendments to the Claims

Please add new Claims 31-33 and cancel Claims 7-16 and 23-30. New Claims 31-33 correspond to objected to Claims 8, 10, and 11, respectively. This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (previously presented): Vacuum load lock semiconductor wafer processing equipment, comprising:

a load lock chamber,

a transfer chamber,

a reaction chamber located above said transfer chamber, and

a robot located outside said load lock chamber that includes a wafer transfer arm that is configured to support said semiconductor wafers in the reaction chamber during a wafer processing process,

wherein said wafer transfer arm is adapted to operate inside said load lock chamber and inside a vacuum, and is adapted to transfer said semiconductor wafers between the load lock chamber, the transfer chamber, and the reaction chamber.

Claim 2 (previously presented): The vacuum load lock semiconductor processing equipment described in Claim 1, further comprising:

a load lock chamber exhaust port through which gases within the load lock chamber can be evacuated,

a transfer chamber exhaust port through which gases within the transfer chamber can be evacuated, and

a reaction chamber exhaust port through which gases within the reaction chamber can be evacuated.

Claim 3 (original): The vacuum load lock semiconductor processing equipment described in Claim 2, wherein said transfer chamber is evacuated from a position lower than said semiconductor wafers.

Claim 4 (original): The vacuum load lock semiconductor processing equipment described in Claim 1, further comprising:

an insulation separating plate adapted to separate said transfer chamber from said reaction chamber.

Claim 5 (original): The vacuum load lock semiconductor processing equipment described in Claim 1, wherein said reaction chamber comprises an insulating material.

Claim 6 (original): The vacuum load lock semiconductor processing equipment described in Claim 1, wherein said transfer chamber and said reaction chamber are configured to prevent formation of a film on an interior surface of said transfer chamber.

Claims 7–16 (cancelled).

Claim 17 (previously presented): A method of processing a semiconductor wafer, the method comprising:

providing a load lock chamber, a transfer chamber, and a reaction chamber, wherein the reaction chamber is positioned above the transfer chamber;

moving a semiconductor wafer between the load lock chamber, the transfer chamber, and the reaction chamber using a wafer transfer arm;

when the semiconductor wafer is not in the reaction chamber, removing gases from the transfer chamber and the reaction chamber through a transfer chamber exhaust port that is positioned below a wafer processing position; and

when the semiconductor wafer is in the reaction chamber, removing gases from the transfer chamber and the reaction chamber through a reaction chamber exhaust port located in the reaction chamber.

Claim 18 (previously presented): The method of Claim 17, further comprising:
introducing an inactive gas into the transfer chamber;
flowing the inactive gas from the transfer chamber to the reaction chamber during a wafer processing operation; and
exhausting the inactive gas through the reaction chamber exhaust port during the wafer processing operation.

Claim 19 (previously presented): The method of Claim 17, further comprising providing an insulating material on an interior surface of the reaction chamber.

Claim 20 (previously presented): The method of Claim 19, wherein the semiconductor wafer separates the reaction chamber from the transfer chamber in the wafer processing position without a seal.

Claim 21 (previously presented): The method of Claim 17, further comprising pressurizing the transfer chamber with an inactive gas during a wafer processing operation.

Claim 22 (previously presented): The method of Claim 17, further comprising switching an active exhaust port from the transfer chamber exhaust port to the reaction chamber exhaust port.

Claims 23–30 (cancelled).

Claim 31 (new): A method of processing semiconductor wafers, comprising:

providing a load lock chamber, a transfer chamber, and a reaction chamber, wherein said reaction chamber is located above said transfer chamber;

providing a robot that includes a wafer transfer arm, wherein said wafer transfer arm is adapted to operate inside said load lock chamber and inside a vacuum and to support said semiconductor wafers in the reaction chamber during a wafer processing process;

transferring said semiconductor wafers between said load lock chamber, said transfer chamber, and said reaction chamber using said wafer transfer arm;

evacuating said reaction chamber by removing a gas within the reaction chamber through a reaction chamber exhaust port; and

evacuating said transfer chamber by removing a gas within the transfer chamber through a transfer chamber exhaust port.

Claim 32 (new): A method of processing semiconductor wafers, comprising:

providing a load lock chamber, a transfer chamber, and a reaction chamber, wherein said reaction chamber is located above said transfer chamber;

providing a robot that includes a wafer transfer arm, wherein said wafer transfer arm is adapted to operate inside said load lock chamber and inside a vacuum and to support said semiconductor wafers in the reaction chamber during a wafer processing process;

transferring said semiconductor wafers between said load lock chamber, said transfer chamber, and said reaction chamber using said wafer transfer arm; and;

preventing a reaction gas in said reaction chamber from entering said transfer chamber by introducing an inactive gas into said transfer chamber.

Claim 33 (new): A method of processing semiconductor wafers, comprising:

providing a load lock chamber, a transfer chamber, and a reaction chamber, wherein said reaction chamber is located above said transfer chamber;

Application Number 10/072,620
Amendment dated 22 November 2004
Reply to Office Action of 22 September 2004

providing a robot that includes a wafer transfer arm, wherein said wafer transfer arm is adapted to operate inside said load lock chamber and inside a vacuum and to support said semiconductor wafers in the reaction chamber during a wafer processing process;

transferring said semiconductor wafers between said load lock chamber, said transfer chamber, and said reaction chamber using said wafer transfer arm; and;

preventing deposition on an interior surface of said reaction chamber by providing an insulating material on said interior surface of said reaction chamber.